

EMC® NetWorker™
Module for MEDITECH
Release 1.0

ADMINISTRATOR'S GUIDE
P/N 300-003-694
REV A01

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Published October, 2006

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Preface.....	v
Chapter 1	NetWorker Module Overview
About NetWorker Module for MEDITECH.....	1-2
Integrated Serverless Backup (ISB) overview.....	1-3
Integrated Disaster Recovery (IDR) overview.....	1-4
System components.....	1-5
The backup process	1-6
The restore process	1-7
Module interface overview.....	1-9
Configure view.....	1-9
Selecting a NetWorker server.....	1-10
Monitor view	1-11
Recover view	1-12
Error Log.....	1-12
Chapter 2	Backup Configuration
Configuration roadmap	2-2
Coherency Groups.....	2-2
Storage arrays.....	2-2
Configuration tasks	2-3
Adding a Coherency Group.....	2-3
Editing a Coherency Group.....	2-5
Adding a storage array	2-6
Editing a storage array.....	2-7
Recovering the configuration file	2-8

Chapter 3	Scheduled Backups	
	About scheduled backups	3-2
	ISB backup process	3-2
	IDR backup process.....	3-2
	Configuring a scheduled backup	3-3
	Scheduled backup task example	3-3
	Scheduling a backup	3-4
	Checking backup status.....	3-6
Chapter 4	Recovering Data	
	Selecting a recover image	4-2
	Browse for recover images	4-2
	View recover image data	4-3
	Recovery Process for IDR Data.....	4-6
	Recovery process for ISB data.....	4-7
	Restoring data to an alternate device.....	4-9
	Checking restore status	4-10
Appendix A	NetWorker Module Commands	
	Overview of the Module commands	A-2
	Using the nsrmedisv command	A-3
	Using NetWorker 7.3 and later.....	A-3
	Command syntax for nsrmedisv	A-3
	Command options for nsrmedisv	A-4
	Using the nsrmedirc command	A-5
	Command syntax for nsrmedirc	A-5
	Command options for nsrmedirc.....	A-5
	Using the nwmedi command	A-7
	Command options for nwmedi	A-7
	Glossary	g-1
	Index	i-1

As part of its effort to continuously improve and enhance the performance and capabilities of the NetWorker Module for MEDITECH product, EMC periodically releases new versions of its hardware and software. Therefore, some functions may not be supported by all revisions of the software currently in use. For the most up-to-date information on product features, refer to the product release notes.

Audience This guide is part of the EMC NetWorker Module for MEDITECH documentation set, and is intended for use by system, NetWorker, and storage administrators during installation and setup of the product. Operators who schedule and monitor backups may also find this guide helpful.

Readers of this guide are expected to be familiar with the following topics:

- ◆ EMC NetWorker, version 7.3 or later
- ◆ MEDITECH MAGIC OSAL platform
- ◆ EMC CLARiiON and CLARiiON Management software

Organization This guide is organized as follows:

- ◆ Chapter 1, “NetWorker Module Overview,” provides overview information about the module, backup processes, and system components.
- ◆ Chapter 2, “Backup Configuration,” provides information and procedures for configuring backups.

- ◆ Chapter 3, “Scheduled Backups,” provides information about performing scheduled backups.
- ◆ Chapter 4, “Recovering Data,” provides process and procedural information for recovering MEDITECH data.
- ◆ Appendix A, “NetWorker Module Commands,” provides module command line information.

Conventions used in this guide

EMC uses the following conventions for notes and caution notices.

Note: A note presents information that is important, but not hazard-related.



CAUTION

A caution contains information essential to avoid data loss or damage to the system or equipment. The caution may apply to hardware or software.

Typographical conventions

EMC uses the following type style conventions in this guide:

bold

- User actions (what the user clicks, presses, or selects)
- Interface elements (button names, dialog box names)
- Names of keys, commands, programs, scripts, applications, utilities, processes, notifications, system calls, services, applications, and utilities in text

italic

- Book titles
- New terms in text
- Emphasis in text

`Courier`

- Prompts
- System output
- Filenames
- Pathnames
- URLs
- Syntax when shown in command line or other examples

`Courier, bold`

- User entry
- Options in command-line syntax

`Courier italic`

- Arguments in examples of command-line syntax
- Variables in examples of screen or file output
- Variables in pathnames

<>

Angle brackets for parameter values (variables) supplied by user.

[]

Square brackets for optional values.

| Vertical bar symbol for alternate selections. The bar means or.

... Ellipsis for nonessential information omitted from the example.

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NetWorker Module Overview

This chapter provides information about how the NetWorker Module for MEDITECH software backs up and restores MEDITECH application data. It includes the following sections:

- ◆ About NetWorker Module for MEDITECH 1-2
- ◆ Integrated Serverless Backup (ISB) overview 1-3
- ◆ Integrated Disaster Recovery (IDR) overview 1-4
- ◆ System components 1-5
- ◆ The backup process 1-6
- ◆ The restore process 1-7
- ◆ Module interface overview 1-9

About NetWorker Module for MEDITECH

EMC® NetWorker™ Module for MEDITECH is used in conjunction with NetWorker to schedule, create, and manage either local or remote replicas of MEDITECH data segments. NetWorker can be fully integrated with the MEDITECH application to enable the system administrator to perform normal scheduled NetWorker save set backups and also to create disaster recovery replicas of the data without interrupting the application. With this module, you can:

- ◆ Create local or remote replicas
- ◆ View backup and restore process information
- ◆ Recover to the main host from any generation of the data

The NetWorker Module for MEDITECH supports MEDITECH installations with EMC CLARiiON® storage systems. Because the backup and mirroring processes have been moved to the backup server and the SAN, the resource demands of full database copying, complete resynchronizations, and multiple sequential writes have been lifted from the MEDITECH servers.

Integrated Serverless Backup (ISB) overview

The NetWorker Module for MEDITECH incorporates Integrated Serverless Backup (ISB) into the NetWorker information protection strategy. MEDITECH ISB provides a system backup process to support local logical unit number (LUN) replication technologies for CLARiiON systems. ISB provides a mechanism to request replication of the databases, which enables the NetWorker Module for MEDITECH to request a freeze and split of MEDITECH segments for MEDITECH hosts.

When a backup copy is requested through the MEDITECH ISB API, MEDITECH prepares its data by making it transitionally on-disk consistent, and then it makes a call to the CLARiiON array to split and create a Snap Copy. After the fracture is completed by the MEDITECH host, it sends the information needed to identify the split mirrors on the SAN and the module backs them up.

Integrated Disaster Recovery (IDR) overview

MEDITECH Integrated Disaster Recovery (IDR) enables the NetWorker Module for MEDITECH to use SAN Copy™ replicas to create remote copies for disaster recovery purposes. IDR becomes increasingly important to health care providers attempting to comply with Health Insurance Portability and Accountability Act (HIPAA) requirements. HIPAA requires national standards for electronic health care transactions and national identifiers for providers, health plans, and employers, and also addresses the security and privacy of health data.

NetWorker Module for MEDITECH uses the CLARiiON SAN Copy storage array capability to facilitate disaster recovery. IDR uses ISB functions to create a database split and then uses replication technologies to move images to a disaster recovery site.

System components

The NetWorker Module for MEDITECH, in conjunction with a NetWorker 7.3 or later client, operates from a Windows 2003 proxy server to communicate with MEDITECH hosts and CLARiiON systems. The following diagram illustrates a typical backup scenario.

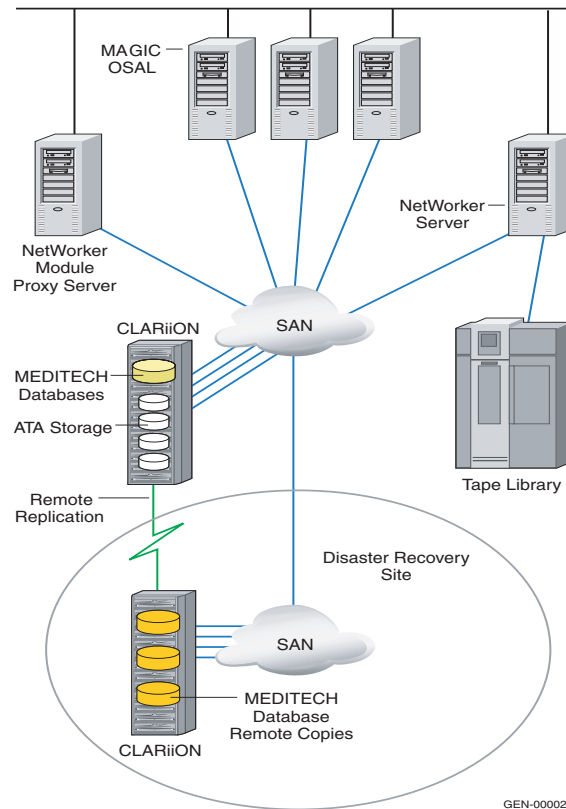


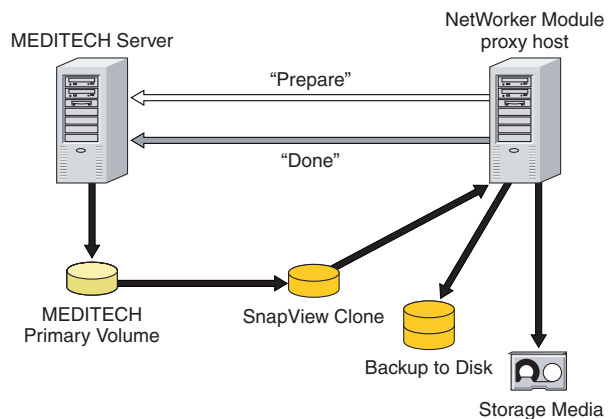
Figure 1-1 MEDITECH host environment with CLARiiON storage

The NetWorker Module for MEDITECH is installed on a proxy host. During a backup or recovery, the proxy host communicates with the MEDITECH hosts across the SAN to split the production and clone CLARiiON LUNs. Backups are stored to either tape or device for ISB or a CLARiiON SAN Copy storage array for IDR.

The backup process

Each backup of MEDITECH is a full backup of a MEDITECH data LUN (MAGIC segment). All backups must be configured and scheduled through the NetWorker Management Console interface. The process for MEDITECH data backup includes the following:

- ◆ When a backup starts, the NetWorker module communicates with one or more MEDITECH hosts to initiate a fracture of its production and clone LUNs.
- ◆ The module mounts the clone.
- ◆ In an ISB backup, the clone image is saved to either a disk or tape device.
- ◆ In an IDR backup, the module uses the CLARiiON SAN Copy storage array capability to back up data to a disaster recovery site, which can be either a local or remote storage system.
- ◆ Once the backup is complete, the NetWorker module notifies the MEDITECH server and the clone is resynchronized with the primary LUN.
- ◆ The backup images can be viewed from the NetWorker Module for MEDITECH interface and selected for restore.



GEN-000019

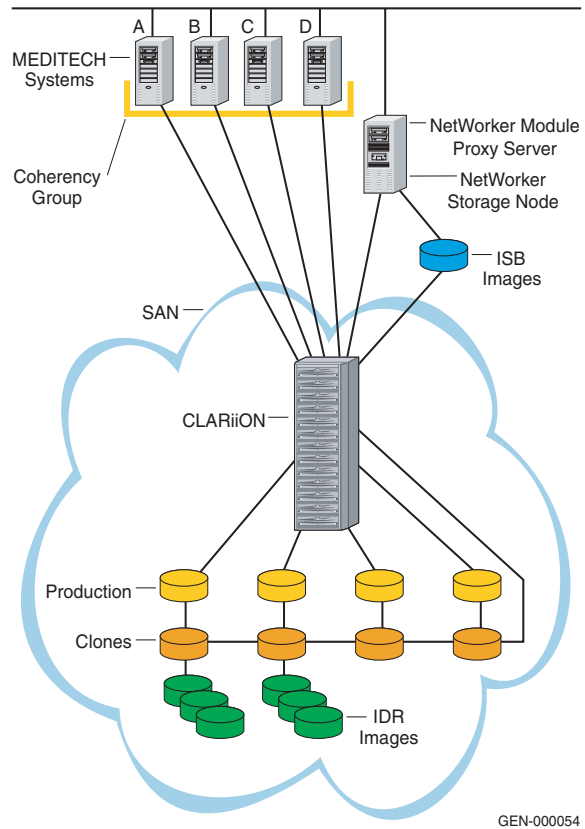
Figure 1-2 Backup process

The restore process

The NetWorker Module for MEDITECH restores ISB data and provides administrative details needed to perform IDR recoveries. The process for MEDITECH data backup includes the following:

- ◆ The MEDITECH host to be recovered is shut down through the MAGIC Console interface. OSAL remains running.
- ◆ The clone and production LUNs are fractured from OSAL.
- ◆ During an ISB recover, the NetWorker Module for MEDITECH interface is used to select and restore the recover image from a NetWorker server.

- ◆ The clone and production LUNs are restored from OSAL.
- ◆ The MEDITECH host is restarted with the recovered data.



GEN-000054

Figure 1-3 Restore process

Module interface overview

The NetWorker Module for MEDITECH user interface is organized into three views: **Configure**, **Monitor**, and **Recover**. The **Monitor** and **Recover** views rely on the selection of a NetWorker server. The following is an overview of each view and the tasks that you can perform.

Configure view

Use the **Configure** view to define the groups of MEDITECH hosts that you want to back up at one time and the CLARiiON arrays that those hosts rely on for data storage. From this section of the interface you can:

- ◆ Create Coherency Groups for MEDITECH hosts
- ◆ Edit Coherency Group properties
- ◆ Remove Coherency Groups
- ◆ Create storage arrays
- ◆ Edit storage arrays
- ◆ Remove storage arrays

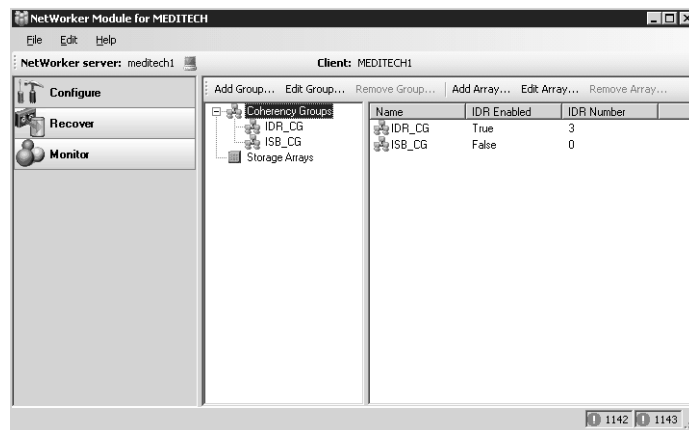


Figure 1-4 Configure view

Selecting a NetWorker server

Select a NetWorker server to determine the backup and recover processes that can be viewed from the **Monitor** and **Recover** pages.

To select a NetWorker server:

1. In the NetWorker Module for MEDITECH interface, click the **NetWorker server** icon in the main toolbar. The **Change NetWorker Server** dialog box is displayed.

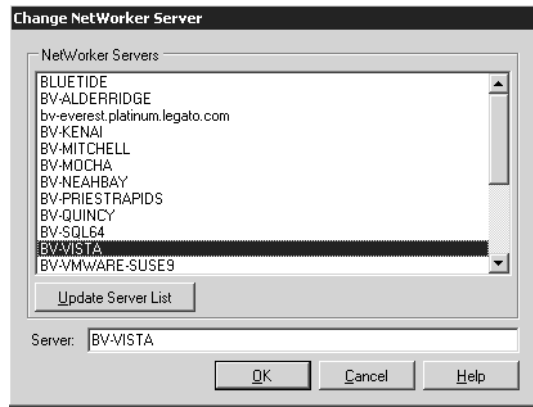


Figure 1-5 Change NetWorker Server dialog box

2. Click **Update Server List** to browse for NetWorker 7.3 or later servers. The discovery process may take a few minutes.
3. Once the list is updated, select a server. Your selection is displayed in the **Server** text box.

You can also type a name in the **Server** text box.

4. When finished, click **OK**.

After you select a server, the backup jobs that are scheduled from that server can be viewed in the **Monitor** view. See “Monitor view” on page 1-11 for more information.

Any recover images that have been saved by this NetWorker server are available in the **Recover** view. See “Recover view” on page 1-12 for more information.

Monitor view

Use the **Monitor** view to follow the progress of backup and recover jobs.

The job summary information includes the unique backup or recover ID, MAGIC names, hostnames, and the start and end time of the job. The job details section provides attributes and values for each job. This information is updated every 30 seconds.

This view displays backup and recover jobs that were performed with the selected NetWorker server. You can monitor jobs from a different NetWorker server. See “Selecting a NetWorker server” on page 1-10 for information about changing the server.

Colored icons to the left of the job ID indicate job status, success, or failure. These icons are also displayed at the bottom of the main window.

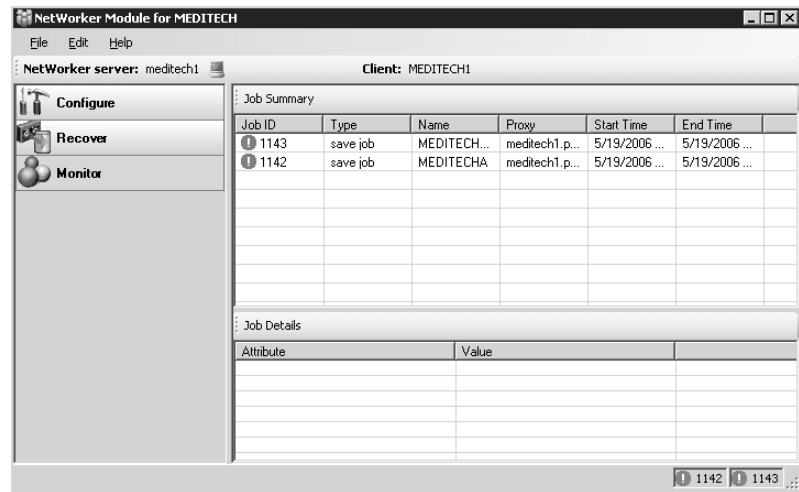


Figure 1-6 Monitor view

Recover view

Use the **Recover** view to browse for and select the recover images that you want to use to restore MEDITECH data. ISB data can be restored from this section of the interface. IDR data must be recovered manually. From this section of the interface you can:

- ◆ Define a time range for browsing recover images
- ◆ Select recover images for restore
- ◆ Run an ISB data recovery

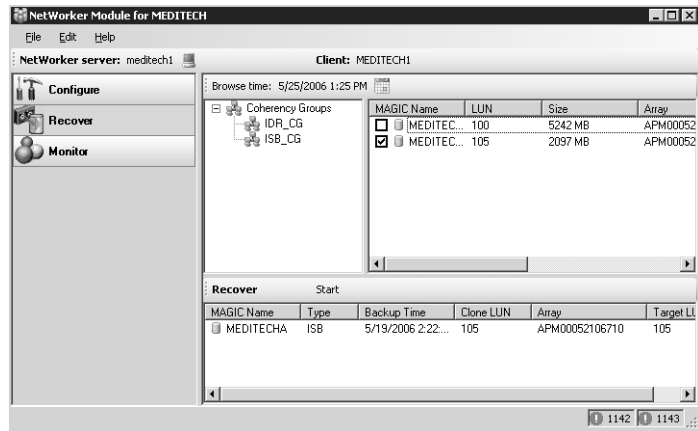


Figure 1-7 Recover view

This view displays recover images from the selected NetWorker server. You can change the server to view recover images from a different NetWorker server. See “Selecting a NetWorker server” on page 1-10 for information about changing the server.

Error Log

Interface actions and error messages are logged in the **nwmedi.log** file in **nsr\applogs**. The file has no size limit and can be deleted if there are no unresolved error messages.

Backup Configuration

There are several necessary configuration tasks that you must perform to facilitate the NetWorker Module for MEDITECH backup and recovery process. The following procedures assume that your MEDITECH host and CLARiiON systems are already installed and configured.

- ◆ Configuration roadmap 2-2
- ◆ Configuration tasks..... 2-3
- ◆ Recovering the configuration file 2-8

Configuration roadmap

Configuration for the NetWorker Module for MEDITECH includes defining MEDITECH hosts to be backed up and identifying the CLARiiON systems that contain that information. The NetWorker Module saves configuration information for storage arrays and Coherency Groups in a file stored locally on the proxy host. Each time a backup is performed, the configuration file is also backed up. This enables the configuration to be recovered if the file is deleted. See “Recovering the configuration file” on page 2-8 for information about recovering this file.

Coherency Groups

The NetWorker Module for MEDITECH uses the concept of Coherency Groups to enable you to back up one or more MEDITECH hosts at the same time. The Coherency Group ensures that the fracture of the CLARiiON clone and production LUNs for a logical group of hosts is done simultaneously. For example, if you wanted to back up all administrative data at one time, you would create a Coherency Group that contained all of the MEDITECH hosts that produce that data.

Storage arrays

Storage arrays are configured to enable the module to connect to CLARiiON systems. This information is used to fracture and resynchronize the clone and production LUNs before and after a backup.

Configuration information for CLARiiON storage arrays and MEDITECH Coherency Groups is defined in the **Configure** section of the NetWorker Module for MEDITECH client.

Note: The first time you open the module interface, a message is displayed stating that configuration information has not yet been created. Click **OK** to continue.

Configuration tasks

It is necessary to configure components of the NetWorker Module for MEDITECH before performing a backup. Configuration includes:

- ◆ Creating a Coherency Group to identify which MEDITECH hosts will participate in scheduled backups
- ◆ Identifying CLARiiON storage arrays used by the MEDITECH hosts

Adding a Coherency Group

Coherency Groups are logical groupings used for MEDITECH hosts that will be backed up at the same time. These groups are used by NetWorker to perform scheduled backups.

Your settings for Coherency Groups should consider the parallelism settings that you define in the NetWorker Management Console. All of the clone and production data segments for each host in the Coherency Group will be split at the same time. The NetWorker Module for MEDITECH will back up as many hosts at one time as the parallel setting allows.

For example, if you define eight MEDITECH hosts for backup in a Coherency Group, the data segment split for all eight hosts happens at the same time. If your NetWorker server parallelism setting is four, the module will process four backups at a time until all eight are finished.

See the *EMC NetWorker Administrator's Guide* for information about sequential backup settings.

To add a Coherency Group:

1. In the NetWorker Module for MEDITECH interface, open the **Configure** view and click **Add Group**. The **Add Group** dialog box is displayed.

Add Coherency Group

Group Name: Administration

MEDITECH Hosts

Host Name: host3

User Name: admin

Password: ●●●●

Confirm password: ●●●●

Port: 2988

Host Name	Port Number	User Name
host1	2988	admin
host2	2988	admin

Clear Remove

Disaster Recovery Options

Create Integrated Disaster Recovery Images

Number of IDR images to create: 4

OK Cancel

Figure 2-1 Add a Coherency Group dialog box

2. Enter a name for this group in the **Group Name** field. The group name can contain up to 64 alphanumeric characters, spaces, underscores (_), and hyphens (-). Names can also be entered as an IPV4 address.
3. Define the hosts that you want to add to this group in the **MEDITECH Hosts** section. Repeat the following steps for each host that you want to add to the group.

- a. Enter the name of the host in the **Host Name** field.
- b. Enter the backup account username and password for the MEDITECH host in the **User Name** and **Password** fields.

Note: These are the username and password values defined for ISB in the MAGIC Console. Access the Serverless Backup Options menu from the MEDITECH Operator's Menu in the MAGIC Console for values.

- c. If necessary, enter the port to use when communicating with this host in the **Port** field. The default is 2988.

- d. Click the right arrow to add the host to the Coherency Group.
 - e. To modify information for an existing host, select the hostname from the table and click the left arrow. Edit the information and click the right arrow to save the changes.
 - f. To remove a host from the Coherency Group, select it and click **Remove**.
4. To back up IDR images using the SAN Copy function from this group, select **Create Integrated Disaster Recovery Images** and select the number of images that you want to create.

Note: These SAN Copy sessions are created in the Navisphere® Console prior to a backup.

5. When finished adding hosts to the group, click **OK**. The group is added to the **Configure** page.

Editing a Coherency Group

To change a Coherency Group:

1. Select an existing group in the **Configure** view and click **Change Coherency Group**. The **Edit Coherency Group** dialog box is displayed.

Host Name	Port Number	User Name
Host 3	143	admin
Host 4	143	admin
Host 5	143	admin

Figure 2-2 Edit Coherency Group dialog box

2. Select a host from the table to the right and click the left arrow to populate the host fields.

3. Edit any necessary information.

Note: The group name cannot be changed.

4. When finished, click **OK**.

Adding a storage array

NetWorker Module for MEDITECH storage arrays enable the module to communicate with the CLARiiON systems that store MEDITECH data.

To add a storage array:

1. In the NetWorker Module for MEDITECH interface, open the **Configure** view and click **Add Array**. The **Add Storage Array** dialog box is displayed.

The screenshot shows a dialog box titled "Add Storage Array" for "EMC CLARiiON". It contains the following fields and buttons:

- Serial Number: APM00052106711 (with a dropdown arrow) and a "Discover..." button.
- Storage Processor A IP Address: 10.5.221.17 and a "Verify..." button.
- Storage Processor B IP Address: 10.5.221.18
- Array Credentials section:
 - User Name: admin
 - Password: [masked with dots]
 - Confirm Password: [masked with dots]
- Buttons: OK and Cancel.

Figure 2-3 Add Storage Array dialog box

2. Enter the serial number for the EMC CLARiiON system in the **Serial Number** field.

You can click **Discover** to identify CLARiiON storage systems on the network. Discovery may take 60 seconds or more.

3. CLARiiON has two network connections for failover. Define the storage processor IP addresses in the **Storage Processor A IP Address** and **Storage Processor B IP Address** fields.

These fields specify the two addresses that enable network access to the CLARiiON system.

4. Enter the user credentials for the NetWorker Module to use when accessing the CLARiiON system in the **Username** and **Password** fields.
5. Click **Verify** to perform validation of the array name, IP addresses, and user credentials.
6. When finished, click **OK**.

Editing a storage array

To edit a storage array:

1. In the **Configure** view, select an existing array and click **Edit Array**. The **Edit Storage Array** dialog box is displayed.

Figure 2-4 Edit Storage Array dialog box

2. Select the serial number of the array that you want to edit from the **Serial Number** menu. The rest of the fields are populated with information specific to that system.
3. Edit any of the related system information.
4. Click **Verify** to make sure that the system information is correct.
5. When finished, click **OK**.

Recovering the configuration file

If a problem occurs on the NetWorker Module for MEDITECH proxy host and the configuration file is corrupted or lost, it can be recovered from the NetWorker User interface. This interface is installed with the NetWorker client.

To recover the configuration information:

1. On the proxy host, click **Start>All Programs>Legato NetWorker>NetWorker User** to open the client interface.
2. Connect to the NetWorker server that you use for scheduled backups.
3. Click the **Recover** icon to browse files that have been backed up. The files for the proxy host are displayed.

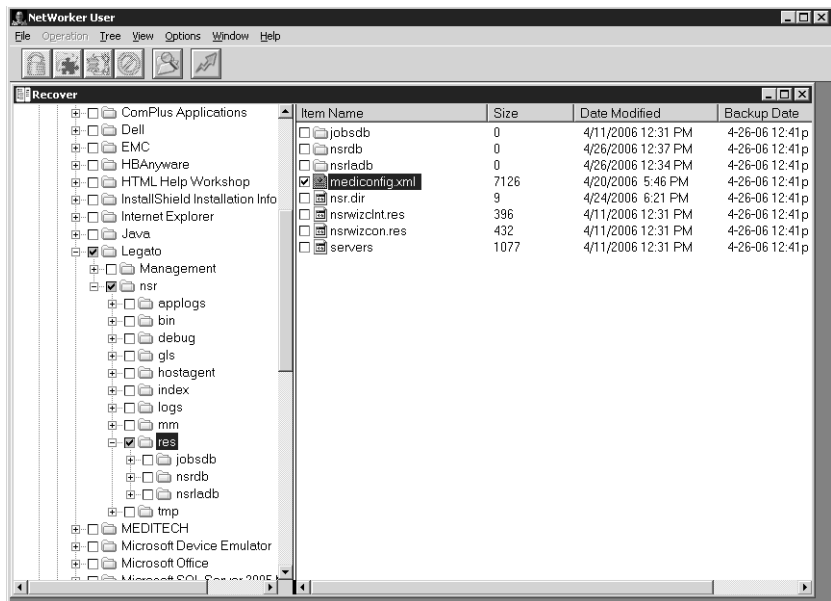


Figure 2-5 Restoring mediconfig.xml from the NetWorker User interface

4. Select **mediconfig.xml** in the **nsr\res** directory.
5. Click **Start** to recover the file.

Scheduled Backups

The NetWorker Module for MEDITECH software enables you to perform regular backups. Backups are configured and scheduled through the NetWorker Console interface. This chapter describes the following:

- ◆ About scheduled backups 3-2
- ◆ Configuring a scheduled backup..... 3-3
- ◆ Checking backup status 3-6

About scheduled backups

The most reliable way to protect MEDITECH data is to schedule backups of the MEDITECH hosts to run at regular intervals. Scheduled backups ensure that all data is automatically saved. The NetWorker server's client indexes and bootstrap file, which reside on the NetWorker server, are backed up at the conclusion of a scheduled backup. The client indexes and bootstrap file are vital for restoring data to the MEDITECH host and the NetWorker server in the event of a disaster.

Scheduling backups for the NetWorker Module is similar to scheduling NetWorker file system backups. On the NetWorker server, appropriate attribute values must be set for various resources, such as Policy, Group, and Client resources. This is done by a NetWorker administrator through the NetWorker Console interface. Scheduled backups can be configured to run at any time and always use backup level full for each transaction.

MEDITECH data is backed up in two ways: using the ISB process or using the IDR process.

ISB backup process

ISB backup images are typically saved to tape or disk. A job to backup data is started by the NetWorker server. The NetWorker Module proxy server prompts the MEDITECH host to break its production and clone data segment. Data from the clone is copied and stored as RAW data to a specified device. Because data is RAW it requires a full backup each time. Once the backup image is saved, the NetWorker Module for MEDITECH prompts the MEDITECH host to resynchronize its production and clone data connections.

IDR backup process

IDR backup images are SAN Copy sessions. A job to back up data is started by the NetWorker server. The NetWorker Module proxy then initiates a call to the MEDITECH host to break the production and clone mirror. NetWorker Module for MEDITECH then directs the CLARiiON system to synchronize with the target SAN Copy on the same system or on a different CLARiiON system. After the backup is complete, the MEDITECH host is directed to resynchronize the production and clone connection.

Configuring a scheduled backup

Backups of MEDITECH data are configured and performed through the NetWorker Console interface. Scheduled backups of the MEDITECH hosts are different from those of the NetWorker Module for MEDITECH proxy host. To perform a file system backup of the proxy host, you should create a standard client resource for it and schedule its backup at a different time.

Scheduled backup task example

Health care company XYZ wants to ensure that all of the computers in the Records department are backed up according to the requirements listed in Table 3-1 on page 3-3. This table also maps each requirement to specific NetWorker features in the NetWorker Console interface. Refer to the *EMC NetWorker Administrator's Guide* for tasks and procedures.

Table 3-1 Records department backup requirements

Requirement	NetWorker feature	Task to perform
Backups occur at the same time.	Backup Schedule Backup Group	Set up a schedule for backups Set up a Group for each client entry
Record system backups for the past 3 months are available immediately.	Browse Policy	Set up Policies for quick access and long-term storage
Record system backups for the past 7 years are available, though not necessarily immediately.	Retention Policy	Set up Policies for quick access and long-term storage
Backups are routed to volumes.	Pools	Set up a Pool to sort backup data
A set of MEDITECH hosts, defined in a Coherency group, is backed up at the same time.	Client resource	Create a Backup Client resource for each Coherency group that you created in the NetWorker Module for MEDITECH interface.
Non-Record system data need be recoverable for one year.	Browse Policy Retention Policy Client resource	Set up Policies for quick access and long-term storage Create a Backup Client Resource

Once these tasks are completed, you can run scheduled backups for MEDITECH data. You should also schedule a separate back up of your proxy host.

When backing up IDR data, it is often helpful to create NetWorker schedules so that ISB backups are also run occasionally. ISB backups are inherently longer-lived and transportable. If you are performing both types of backups, create separate Coherency Groups for each on the proxy host, and separate schedules for each Coherency Group on the NetWorker server. See the *EMC NetWorker Administrator's Guide* for complete tasks and procedures.

For example, you might schedule backups every 4 hours, where a backup at midnight is an ISB backup job, and the others are IDR backups.



CAUTION

ISB and IDR backups should be scheduled so that they do not collide. If one starts while the other is active, they will both fail to run successfully.

Scheduling a backup

Follow these general steps to schedule backups from the NetWorker Console interface:

Note: Make sure that you have your backup devices configured before scheduling a backup. See the *EMC NetWorker Administrator's Guide* for complete tasks and procedures.

1. Select **Enterprise** on the taskbar and add NetWorker servers.
2. Highlight a server; right-click and select **Launch Application**.
3. Select **Configuration** on the taskbar.
4. Define schedules, groups, and clients specifically for MEDITECH hosts:
 - Create a group that includes the NetWorker Module for MEDITECH proxy host connection information. If you are performing both IDR and ISB backups, create a group for each.
 - Create a client for the proxy server that uses the backup command **nsrmedisv.exe**.

Note: Make sure that the Retry option is set to zero.

- Create a save set to identify each Coherency group that you created in the NetWorker Module client for the MEDITECH hosts. The syntax is **MEDI:/<coherency group>**.
- Schedule the backup.

For more information about scheduling backups, see the "Backing Up Data" chapter in the *EMC NetWorker Administrator's Guide*.

Checking backup status

Once a backup process is started from the NetWorker Management Console, you can check its status from the following locations:

- ◆ From the NetWorker Module for MEDITECH interface, you can view job status from the **Monitor** view.
- ◆ On the proxy host, you can check that the **nsrmedisv.exe** job process is running in the Windows Task Manager.
- ◆ On the proxy host, open the **nsrmedisv.log** file for details about the backup job. The default location for the log file is **C:\Program Files\Legato\nsr\applogs**.

If the backup is not successful, or if the CLARiON LUN connection information was not correct, the module will attempt to resynchronize the clone and production LUNs.

If a backup job process fails to complete, and a new backup is started, the following actions occur:

- ◆ The first backup process is aborted.
- ◆ The clone and production LUNs are resynchronized.
- ◆ NetWorker restarts the backup after a two-minute interval.

This chapter describes the recovery process for MEDITECH data. It includes the following sections:

- ◆ Selecting a recover image..... 4-2
- ◆ Recovery Process for IDR Data 4-6
- ◆ Recovery process for ISB data 4-7
- ◆ Restoring data to an alternate device 4-9
- ◆ Checking restore status 4-10

Note: Always contact your MEDITECH HCIS Coordinator or the MEDITECH Systems Support Group if you believe you have a problem that necessitates a data recovery. MEDITECH must be involved in the restore at each step.

Selecting a recover image

Browse for and view recover images for both ISB and IDR restores in the **Recover** view of the NetWorker Module for MEDITECH interface. Before you perform a restore, you can view the properties of each backup including backup time, fracture time, and LUN and array information. For an ISB recover image, you can view the required NetWorker volumes and the backup version.

Note: Only an ISB restore can be performed through the NetWorker Module.

Browse for recover images

To browse for recover images:

1. In the NetWorker Module for MEDITECH interface, select the NetWorker server that you used to back up data. See “Selecting a NetWorker server” on page 1-10.
2. Click **Recover** to open the **Recover** view.
3. Click the **Browse** calendar icon to select the point in time from which you want to view backup images. The default is the current time.

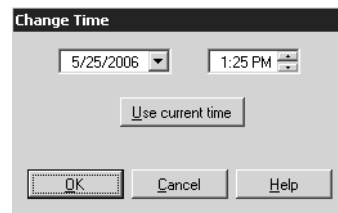


Figure 4-1 Change Time dialog box

4. Click the drop-down arrows to select the date and time for the images that you want to view. The search displays images from the specified date and prior.

View recover image data

To view recover image data:

1. In the NetWorker Module for MEDITECH interface, click **Recover** to open the **Recover** view.
2. Select a NetWorker server and browse time to view a list of backup images. See “Selecting a NetWorker server” on page 1-10, and “Browse for recover images” on page 4-2.
3. Select the Coherency Group from which you want to view images. The available images for the specified time are listed.

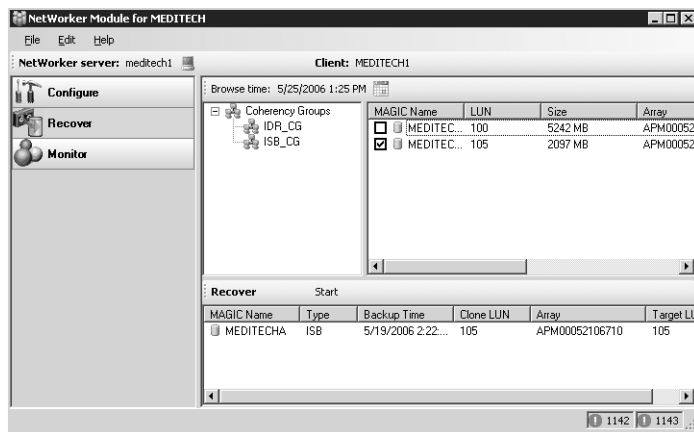


Figure 4-2 Available recover images

4. ISB backups can be added to the recover job list by marking the checkbox in the list. Right-click a recover image to view additional information.

For both ISB and IDR images, you can view backup property information.

For ISB images, you can view version and volume information for each recover image.

- View properties information for the recover image by right-clicking on it and selecting **Properties**. The **Properties** window is displayed.

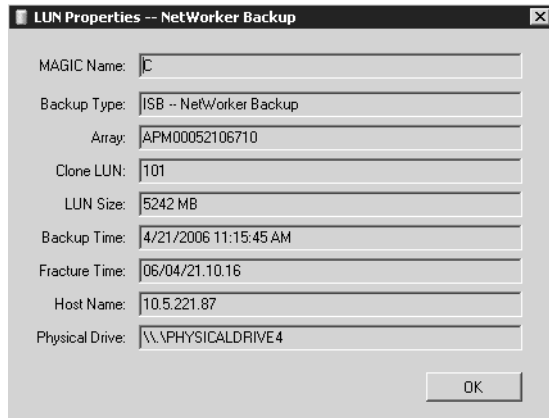


Figure 4-3 LUN Properties window

An IDR recover image lists the SAN Copy session name in the **Properties** window. You will need this name to recover the image through the Navisphere Console or CLI. See “Recovery Process for IDR Data” on page 4-6 for the IDR recover process.

- View the version information for a recover image by right-clicking on it and selecting **Versions**.

The **Versions** dialog box is displayed.

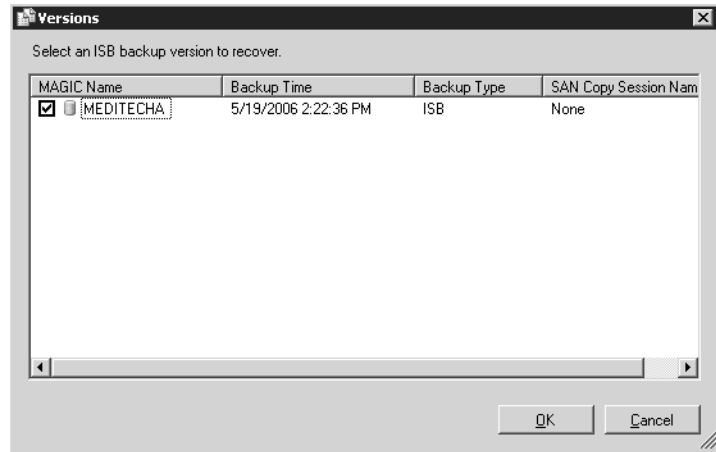


Figure 4-4 Versions dialog box

Select the version of the ISB image that you want to recover and click **OK**. The image is added to the **Recover** job list.

- View the required NetWorker volumes for an ISB image by right-clicking on it and selecting **Required Volumes**. This is necessary only if you need to know which tapes are required. The **Required NetWorker Volumes** window is displayed.

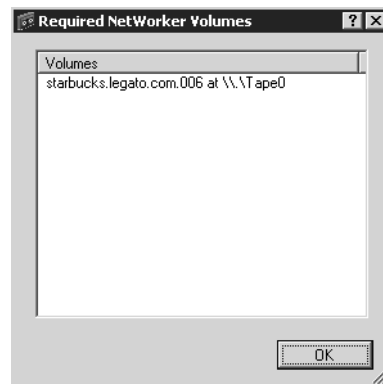


Figure 4-5 Required NetWorker Volumes window

Once you select an ISB image, it is listed in the **Recover** jobs list and can be run. See “Recovery process for ISB data” on page 4-7 for steps.

Recovery Process for IDR Data

The NetWorker Module for MEDITECH provides the data necessary for restoring IDR backups. The module does not recover IDR data. Customers should contact the MEDITECH Systems Support Group for assistance when recovering IDR data.

The process for restoring an IDR image includes the following steps:

1. Make sure that MAGIC is not running on the target MEDITECH host. OSAL should still be running.
2. From an OSAL command prompt, run the **backupprep** command to fracture the clone and production data segments.
3. You can browse for the SAN Copy restore image from the **Recover** view in the NetWorker Module for MEDITECH interface. You will need the name of the SAN Copy session, which is listed for each recover image in the **Properties** window. See “Selecting a recover image” on page 4-2.
4. Recover the SAN Copy image from the Navisphere Console interface or Navisphere CLI. If the SAN Copy session is on the local machine, you can create and restore from a SnapView™ clone.

Note: You can use CLARiiON's **Allow Protected Restore** option to fracture the clone and production segments immediately after the restore. This may be helpful while performing debug operations.

5. Once the restore is complete, return to the OSAL command prompt and run the **restore** command to resynchronize the clone and production data segments.
6. Run the **boot** command to start MAGIC.

Recovery process for ISB data

NetWorker Module for MEDITECH can be used to restore a MAGIC segment image from an ISB backup on an OSAL machine attached to a SAN via EMC's CLARiiON storage system.

To recover MEDITECH data:

1. Make sure that MAGIC is not running on the target MEDITECH host. OSAL should still be running.
2. From an OSAL command prompt, run the **backupperp** command to fracture the clone and production data segments.
3. In the NetWorker Module for MEDITECH interface, click **Recover**.
4. Select the NetWorker server and browse time for recover images. See "Selecting a recover image" on page 4-2.
5. Select the Coherency Group from which you want to view restore images. The available images for the specified server and time are listed.

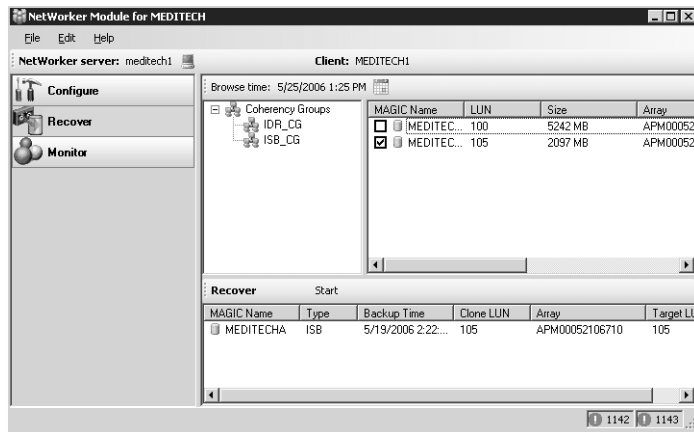


Figure 4-6 Available recover images

6. Select one or more MAGIC LUNs to recover. As you select them, they are moved to the **Recover** job list.

7. To select a LUN for this recover that is not the original LUN specified for backup, right-click an item in the **Recover** job list and select **Target LUN**. The **Select Target LUN** dialog box is displayed.

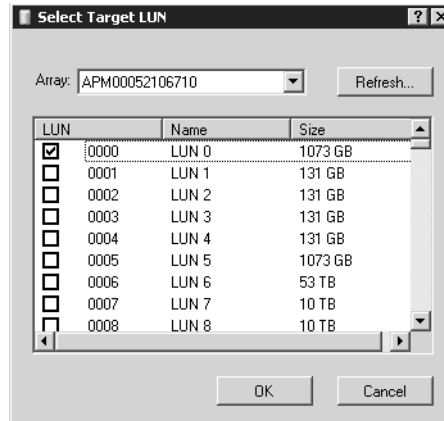


Figure 4-7 Select Target LUN dialog box

8. Select the array that you want to view from the **Array** list. You can click **Refresh** to update the list of LUNs for the selected array.
9. Select one or more LUNs to recover and click **OK**.
10. Once you have selected the recover images and defined the LUN to recover in the **Recover** jobs list, click **Start**.
11. When the restore is complete, return to the OSAL command prompt and run the **restore** command to resynchronize the clone and production data segments.
12. Run the **boot** command to start MAGIC.

The physical disk numbers may change from the time of the backup to the needed restore. NetWorker Module for MEDITECH validates the disk numbers and restores to one of the following:

- ◆ The LUN where the disk is located
- ◆ A different LUN on another CLARiiON system
- ◆ A temporary LUN

Restoring data to an alternate device

A MAGIC segment image can be restored to an offline drive for the purpose of enabling a temporary segment and extracting data that was lost from a live segment. An extra, offline disk is required as the target drive for the restore. The drive does not need to be allocated to the machine where the live segment resides. The target drive must be large enough to accommodate the restore image, and it must be configured to a machine that has the same block size as the machine where the live segment resides. The offline drive must have an associated backup drive and the serverless backup must be in an enabled state.

The process of restoring a segment to an offline drive begins with the creation of a MAGIC disk set. The associated backup drive is then fractured and the restore from tape is performed. The targeted disk is then accessed by the NetWorker Module proxy server and NetWorker Module for MEDITECH application and restored from tape. After a successful restore from tape, the disk is removed from the proxy server and made accessible to the MAGIC machine. A boot command is then issued from the MAGIC OSAL console, specifying the target disk as the source of the MAGIC OSAL image. The MAGIC machine can then be restored.

After the data is recovered the temporary segment is disabled and the MAGIC set can be deleted.

Checking restore status

For an ISB recovery, you can view recover status from the **Monitor** view. You can also view details in the **nsrmedirc.log** file in the NetWorker installation **applogs** directory.

For an IDR recovery, you can view backup information before you perform a restore. Run the following command from the NetWorker server to view details:

```
nsrmedirc -s <networker_server> -X
```

A **.csv** file with this information is also saved to the NetWorker installation **applogs** directory.

NetWorker Module Commands

This appendix provides syntax, notation, and related information for NetWorker Module for MEDITECH commands and command options. Command-line examples are provided.

Note: The command-line syntax examples provided in the following sections are shown in a multiple-line format in order to improve the readability. When actually entering a command at the command prompt, the command, command options, and specified data must all be entered on a single line.

This appendix includes the following sections:

- ◆ Overview of the Module commands A-2
- ◆ Using the nsrmedisv command A-3
- ◆ Using the nsrmedirc command A-5
- ◆ Using the nwmedi command A-7

Overview of the Module commands

NetWorker Module for MEDITECH commands perform the following functions:

- ◆ **nsrmedisv** backs up the specified MEDITECH data objects. “Using the nsrmedisv command” on page A-3 provides more information.
- ◆ **nsrmedirc** restores the specified MEDITECH data objects. “Using the nsrmedirc command” on page A-5 provides more information.
- ◆ **nwmedi** invokes the client graphical user interface. “Using the nwmedi command” on page A-7 provides more information.

Descriptions, command options, and usage scenarios for each command are defined in the following sections. However, when initiating the commands, keep in mind these notes regarding syntax:

- ◆ Case is very important when specifying command-line flags. Each command option is either lowercase or uppercase and, frequently, both the cases of a letter are included in the set of command options.
- ◆ Brackets ([]) are used to denote the optional portions of a command (for example, command options and corresponding arguments, if any). When initiating an actual backup or restore operation, do not include brackets.
- ◆ Data items must follow:
 - All other command options
 - Parameters on the command line

An application log is generated for both **nsrmedisv.exe** and **nsrmedirc.exe** programs. The logs are written into the **nsr\applogs** folder on the proxy server host. The logs are cumulative and are appended each time the **nsrmedisv.exe** or **nsrmedirc.exe** program runs.

Using the nsrmedisv command

The **nsrmedisv** command is used to back up MEDITECH data segments.

To initiate a backup operation, specify **nsrmedisv** and its command options for the Backup Command attribute in the Client resource or from a Windows command prompt.

Using NetWorker 7.3 and later

To modify the Backup Command attribute:

1. From the **Administration** window, click **Configuration**.
2. In the expanded left pane, click **Clients**.
3. In the right-side pane, right-click the client you want, and select **Properties**.
4. In the **Apps & Modules** tab of the **Properties** dialog box, enter **nsrmedisv** and any needed command options in the **Backup Command** field.
5. Click **OK**.

Note: The **-b** and **-l** command options are valid only for manual backups initiated from a Windows command prompt on a client host. Do not use either of these options when initiating a scheduled save in the NetWorker Administrator program.

Command syntax for nsrmedisv

The **nsrmedisv** command syntax is:

```
nsrmedisv [-nqVv] [-s server_name] [-e date]
[-g group ] [-m masquerade] -N saveset_name
```

Command options for nsrmedisv

Command options are as follows:

Table A-1 Command options for nsrmedisv

Command options	Descriptions
-e	Specifies the expiration date of the save set.
-g	Specifies the save group. The NetWorker server and the savegrp command use the group parameter to select the media pool.
-m	Specifies the NetWorker Module for MEDITECH proxy server.
-H	Uppercase -H uses the NORECOVERY option when backing up transaction logs. It leaves the database in Restoring state.
-N	Specifies the NetWorker saveset name, which includes the Coherency Group name, such as: -N MEDI:CoherencyGroupName
-n	Specifies that the save should not write data.
-q	Displays nsrmedisv messages in quiet mode; only summary information and error messages are displayed.
-s	Specifies the NetWorker server to use for the backup operation.
-V	Specifies the version number of the NetWorker Module for MEDITECH.
-v	Displays nsrmedisv messages in verbose mode, providing detailed information about the progress of the backup operation.

Using the nsrmedirc command

The **nsrmedirc** command restores specified MEDITECH data from the NetWorker system. To initiate a restore operation, specify **nsrmedirc** and any of its command options at a Windows command prompt.

Command syntax for nsrmedirc

The **nsrmedirc** command syntax is as follows:

```
nsrmedirc [-nqVvxz] [-i {nNyYrR}]
[-d destination] [-C storage_array -L drive_number]
[-s server] [-c client] [-t date] [-y count]
MAGICNAME
```

Command options for nsrmedirc

The command options are as follows.

Table A-2 Command options for nsrmedirc

Command options	Description
-c	Specifies the proxy server client name from which data is to be restored.
-C	Specifies the storage array name of an alternate recovery destination. This option must be used with the -L option.
-d	Specifies a Windows Server physical drive to be used for an alternate recovery location. The format is <i>-d \\.\PhysicalDriveName</i>
-i {nNyYrR}	Overwrites a response.
-L	Specifies the drive number of an alternate recovery destination. This option must be used with the -C option. If no destination options are specified, the original data segment is restored. If the -d option is used with the -C and -L options, nsrmedirc ensures that the destinations agree.
MAGICNAME	Specifies the name of the MAGIC name using the following format: MEDI: /<Coherency_Group>/<Logical_Object> where the logical objects are those listed with the nsrmedirc -z command.
-n	Passes data to ttyrecov , which inhibits the writing of recovery data.

Table A-2 Command options for nsrmedirc (continued)

Command options	Description
-q	Specifies quiet mode for logging messages, which provides minimal information about the progress of the restore operation, including error messages.
-s	Specifies the NetWorker server to use for the backup operation.
-t	Restores data as of the specified date. When the date of a backup version occurs before or is equivalent to the date, the backup version is restored. Follow the nsr_getdate command syntax guidelines when formatting the date.
-v	Displays nsrmedirc messages in verbose mode, providing detailed information about the progress of the backup operation.
-V	Specifies the version number of the NetWorker Module for MEDITECH.
-x	Generates a .csv file in the nsrapplogs directory of NetWorker Module for MEDITECH IDR save sets. This information can be imported into a spread sheet.
-y	Specifies the number of save sets that are listed with -x and -z output.
-z	Prints a list of NetWorker Module for MEDITECH save sets, similar in output to the NetWorker nsrinfo command.

Using the nwmedi command

The **nwmedi** command invokes the NetWorker Module for MEDITECH User program, the client graphical user interface.

To run the NetWorker Module for MEDITECH User program from the Windows Start menu, select **Programs>NetWorker>NetWorker User for MEDITECH**.

Command options for nwmedi

The **nwmedi** command options are as follows:

```
nwmedi [-s NetWorker_server]
```

Table A-3 Command options for nwmedi

Command options for nwmedi	Description
-s	Specifies the NetWorker server.

This glossary contains terms related to disk storage subsystems. Many of these terms are used in this manual.

A

- adapter** Card that provides the physical interface between the director and disk devices (SCSI adapter), director and parallel channels (Bus & Tag adapter), director and serial channels (Serial adapter).
- ad hoc backup** A backup that a user requests from the client. The user specifies the files, file systems, and directories to backup.
- administrator** The person who installs, configures, and maintains the NetWorker software.
- array** See "storage array."

B

- backup** An operation that saves data to a volume.
- backup cycle** The period of time from one level full backup to the next level full backup.
- backup volume** A volume used to store backup data.
- bootstrap** A save set that is essential for NetWorker disaster recovery. A bootstrap is composed of two components that reside on the NetWorker server: the media and the resource. The bootstrap also

provides information that is essential for recovering the client file index.

browse policy A policy that determines how long backed up data is available for quick access. See also "retention policy."

C

cache Random access electronic storage used to retain frequently used data for faster access by the channel.

client A computer, workstation, or file server whose data can be backed up or recovered. See also "Client resource."

client file index A database that tracks every database object, file, or file system that is backed up. The NetWorker server maintains a single client index file for each client.

Client resource Identifies the save sets to be backed up on a client. The Client resource also specifies information about the backup, such as the schedule, browse policy, and retention policy for the save sets. Multiple Client resources can be configured for one client computer. For example, you could create one Client resource to back up business data and another to back up operating system files. See also "client."

clone A reliable copy of backed up data. Unlike volumes created with a simple copy command, clone volumes can be used in exactly the same way as the original backup volume. Single save sets or entire volumes can be cloned.

coherency group A user-defined grouping of MEDITECH hosts that will be backed up at the same time. Coherency groups are defined within the NetWorker Module for MEDITECH interface and are referenced when creating a NetWorker save set.

Console server NetWorker servers and clients are managed from the NetWorker Console server. The Console server also provides reporting and monitoring capabilities for all NetWorker processes.

D

data availability	Access to any and all user data by the application.
data retention policy	See "retention policy."
data segment	A unit of data that can be backed up and recovered. For CLARiiON systems, this is called a LUN. See also "Logical Unit (LUN)."
device	<ol style="list-style-type: none">1. A storage unit that reads from and writes to backup volumes. A storage unit can be a tape device, optical drive, autochanger, or file connected to the NetWorker server or storage node.2. When dynamic drive sharing (DDS) is enabled, refers to the access path to the physical drive.
directed recovery	A recovery method used to recover data that originated on one computer to another computer.
directive	Instructions to take special actions on a given set of files for a specified client during a backup.
drive	When dynamic drive sharing (DDS) is enabled, refers to the physical backup object, such as a tape drive, disk, or file. See also "device."

E

expiration date	The date when a volume changes from read/write to read-only.
expired save set	A save set that has reached its browse time and is no longer browsable.

F

failover	Relocating a cluster resource to its redundant (backup) component, either because of a hardware or software failure or for administrative purposes.
file index	See "client file index."
fracture	The operation of severing the connection between a production and clone data segment.
full backup	See "level."

G

group A client or group of clients configured to back up files to the NetWorker server at a designated time of day.

H

host ID A serial number that uniquely identifies a computer.

I

inactivity timeout The number of minutes to wait before a client is considered to be unavailable for backup.

insertion time The time that the save set record was most recently introduced into the save set database.

I/O device An addressable input/output unit, such as a disk device.

J

Java A high-level programming language. The Java Virtual Machine (JVM) enables the same, unmodified Java program to run on most computer operating systems.

Java Virtual Machine (JVM) An execution environment for interpreting the Java programming language. Each operating system runs a unique JVM to interpret Java code.

L

label A NetWorker assigned label that uniquely identifies a volume. Templates can be used to define label parameters.

level A measurement that determines how much data is saved during a scheduled or ad hoc backup.

A full (f) backup backs up all files, regardless of whether they have changed. Levels one through nine [1-9] backup files that have changed since the last lower numbered backup level. An incremental (incr) backup backs up only files that have changed since the last backup.

license enabler A code that is required to run a feature or product.

License Manager (LLM) An application that provides a central point for managing product licenses.

Logical Unit (LUN) A logical unit of storage on a CLARiiON system.

M

managed applications A program that can be monitored and/or administered from the Console server.

manual backup See "ad hoc backup."

media The physical storage medium, such as magnetic tape, optical disk, or file system to which backup data is written.

mirrored pair A logical volume with all data recorded twice, once on each of two different physical devices.

N

NetWorker administrator A user who can add to or change the configuration of the NetWorker server, media devices, and libraries. NetWorker administrators must have their usernames included in the NetWorker server Administrator list.

NetWorker Console server See "Console server."

NetWorker server The computer running the NetWorker server software, which contains the client configuration information and provides backup and recovery services to the clients on the same network.

NetWorker storage node See "storage node."

P

policy A set of constraints that specify how long data is available for recovery. Each Client resource has a browse policy and a retention policy.

R

recover	To restore files from a backup volume to a client disk.
recyclable save set	A save set whose browse and retention policies have expired. Recyclable save sets are removed from the media database.
recyclable volume	A volume whose data has passed both its browse and retention policies and is now available to be relabeled.
remote device	A storage device that is attached to a storage node.
remote procedure call (RPC)	The protocol that the NetWorker server uses to perform client requests over a network.
resource	A component that describes the NetWorker server or its clients. Clients, devices, schedules, groups, and policies are all NetWorker resources. Each resource has attributes that define its properties.
retention policy	Determines how long backup data is available for recovery, though not necessarily immediate recovery. See also "browse policy."
retry mechanism	The action NetWorker software performs when client operations fail. This situation might occur when the rate of transmission is either low or nonexistent.

S

SAN Copy	An EMC software feature that enables the copying of data from one location to another.
save	The command that backs up client files and makes entries in the online index.
save set	A group of files or a file system that is backed up on storage media.
snapshot	A point-in-time copy of data created during an instant backup.
storage array	A configuration element in the NetWorker Module for MEDITECH interface that enables the proxy server to communicate with the CLARiiON systems that store MEDITECH data.
storage node	A storage device physically attached to another computer whose backup operations are controlled by the NetWorker server.

V

- volume**
1. The physical storage medium, such as magnetic tape, optical disk, or file system to which backup data is written.
 2. An identifiable unit of data storage that may reside on one or more computer disks.

A

applogs directory 1-12, 3-6, 4-10, A-2

B

backup

checking status 3-6

configuration roadmap 2-2

process overview 1-6, 3-2

IDR 3-2

ISB 3-2

scheduling a backup 3-3, 3-4

system overview 1-5

viewing image properties 4-4

viewing versions 4-4

viewing volume data 4-5

browse policy 3-3

C

client resource 3-3

Coherency groups

adding a group 2-3

defining for backup 3-5

editing a group 2-5

overview 2-2

comments vii

configuration

overview 2-2

tasks 2-3

Configure view 1-9

E

error log 1-12

I

Integrated Disaster Recovery (IDR)

overview 1-4

restore 4-6

Integrated Serverless Backup (ISB)

overview 1-3

restore 4-7

L

LUN 1-3

restoring to alternate device 4-9

selecting for restore 4-8

M

MEDITECH hosts

define for backup 2-4

Monitor view 1-11

N

Navisphere Console 4-6

NetWorker Console interface 3-4

NetWorker Module for MEDITECH

interface overview 1-9

nwmedi command A-2

system components 1-5

NetWorker server

selecting a server 1-10

supported versions 1-5

nsrmedirc

command A-2

command options A-5

nsrmedirc.log 4-10

- nsrmedisv
 - command A-2
 - command options A-4
- nsrmedisv.log 3-6
- nwmedi
 - command A-2
 - command options A-7
- nwmedi.log 1-12

O

- OSAL 1-7
 - IDR recover 4-6
 - ISB recover 4-7
- overview 1-2

P

- pools 3-3

R

- Recover view 1-12
- restore
 - checking status 4-10
 - IDR data 4-6
 - ISB data 4-7
 - process overview 1-7
 - selecting images 4-2
 - using alternate device 4-9
- retention policy 3-3

S

- SAN Copy 1-4
- Storage arrays
 - adding an array 2-6
 - editing an array 2-7
 - overview 2-2

V

- versions, backup 4-4
- volumes 4-5